What we claim and desire to secure by Letters Patent is:

~~1. A method for recording images of small particles,~~ such as grains from cereals and like crops, to analyze the quality of the particles, especially to detect any cracking in the particles, said method comprising the steps of

feeding particle samples which each comprise at least one particle, to a place for recording an image,

illuminating a particle sample from at least two directions simultaneously, the illumination occurring with different light wavelength for each direction,

recording an image of the illuminated particle sample with the aid of an image-recording means, which records partial images of the particle sample in different channels, which are sensitive to different wavelengths, and

comparing the different partial images for analysis of the particle sample, each partial image showing the particle sample illuminated from one direction by the channel recording only one of the different light wavelengths.

2. The method as claimed in claim 1, wherein the illumination and recording of an image of a particle sample occur from angles to the particle sample which are so different that essentially no directly reflected light from the particle sample reaches the image-recording means.

3. The method as claimed in claim 2, wherein the particle sample is illuminated with sweep light, i.e. the illumination occurs with sweeping incidence on the particle sample, and the angle of incidence of the light is close to 90° to the direction of the image-recording means.

4. The method as claimed in claim 1, wherein the particle samples are fed during continuous movement.

5. The method as claimed in claim 1, further comprising the step of dividing an image of a particle sample comprising a plurality of particles, into images of one particle each.

6. The method as claimed in claim 1, wherein light transmitted through the particle sample is measured in the image-recording means.

7. The method as claimed in claim 1, wherein only one particle is fed in each particle sample.

8. The method as claimed in claim 7, wherein the particle samples are fed by a carrier, which has sample holders for taking up a particle in each sample holder, which are formed like the particles so that the orientation of a particle in the sample holder is controlled.

9. The method as claimed in claim 8, wherein the particle sample is illuminated with two different wavelengths from two different illuminating means and the angle between the directions of illumination of the two illuminating means is essentially 180°.

10. The method as claimed in claim 1, wherein the particle sample is illuminated with three different wavelengths from three different illuminating means, and the angle between the directions of illumination of two neighboring illuminating means is essentially 120°.

11. The method as claimed in claim 1, wherein the step of comparing the different partial images comprises the step of subtracting the partial image from a first channel from the partial image from a second channel.

12. The method as claimed in claim 1, wherein the image-recording means is a digital camera.

13. The method as claimed in claim 1, further comprising the step of following the feeding of the particle sample with a mirror, so that a mirror image of particle sample falls on a center axis of the feeding movement, the mirror image of the particle sample standing essentially still seen from the image-recording means as an image is being recorded, owing to the fact that the mirror image of the particle sample is positioned on the center axis of the movement.

14. The method as claimed in claim 1, wherein the different light wavelengths comprise red, green and blue light.

15. A device for recording images of small particles, such as grains from cereals and like crops, to analyze the quality of the particles, especially to

(continued)

(continued claim 15)

detect any cracking in the particles, said device comprising

a carrier which feeds particle samples which each comprise at least one particle, to a place for image recording,

at least two illuminating means which are adapted to simultaneously illuminate a particle sample with different light wavelength and from different directions,

an image-recording means which records an image of the illuminated particle sample, the image-recording means recording partial images of the particle sample in different channels which are sensitive to different wavelengths, and

an analyzing means for comparing the different partial images for analysis of the particle sample, each partial image showing the particle sample illuminated from one direction by the channel recording only one of the different light wavelengths.

16. The device as claimed in claim 15, wherein the illuminating means and the image-recording means are mounted at angles to the particle sample that are so different that essentially no directly reflected light from the particle sample reaches the image-recording means.

17. The device as claimed in claim 16, wherein the particle sample is illuminated with sweep light, i.e. illumination occurs with sweeping incidence on the par-

(continued)

(continued claim 17)

ticle sample, and the angle of ~~incidence of the light~~ is close to 90° to the direction of the image-recording means.

18. The device as claimed in claim 15, wherein the carrier is adapted to feed particle samples during continuous movement.

19. The device as claimed in claim 15, which comprises a means for image analysis of the recorded image, an image of a particle sample comprising a plurality of particles being, with the aid of the means for image analysis, divisible into images of one particle each.

20. The device as claimed in claim 15, wherein the illuminating means and the image-recording means are mounted on one side each of the particle sample, so that light transmitted through the particle sample is measured in the image-recording means.

21. The device as claimed in claim 15, wherein the carrier is adapted to take up only one particle in each particle sample.

22. The device as claimed in claim 21, wherein the carrier has sample holders for taking up one particle in each sample holder, which are formed like the particles so that the orientation of a particle in the sample holder is controlled.

23. The device as claimed in claim 22, wherein two different illuminating means are arranged on one side

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(continued ~~claim 23~~)

each of the sample holder, the angle between the directions of illumination of the two illuminating means being essentially 180°.

24. The device as claimed in claim 15, wherein three different illuminating means are arranged to illuminate the particle sample, the angle between the directions of illumination of two neighboring illuminating means being essentially 120°.

25. The device as claimed in claim 15, wherein the analyzing means is adapted to subtract the partial image from a first channel from the partial image from a second channel.

26. The device as claimed in claim 15, wherein the image-recording means is a digital camera.

27. The device as claimed in claim 22, further comprising an image-supporting means which has a mirror for each sample holder and following the movement of the sample holder and projecting a mirror image of a particle sample in the sample holder on a center axis of the feeding movement, the mirror image of the particle sample standing essentially still seen from the image-recording means as image recording occurs, owing to the fact that the mirror image of the particle sample is positioned on the center axis of the movement.